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The Crime Prevention Capability Maturity Model

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From: Marc Coester and Erich Marks (Eds.):
International Perspectives of Crime Prevention 6
Contributions from the 7th Annual International Forum 2013
within the German Congress on Crime Prevention
Forum Verlag Godesberg GmbH 2014

978-3-942865-29-6 (Printausgabe)
978-3-942865-30-2 (eBook)

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Policy makers and practitioners across Europe recognise the value of considering crime prevention within urban design, planning and development. However, standard principles and practices do not transfer easily across different contexts. The issue of transferability was explored by the EU-funded research project, Planning Urban Security (PLuS). The project resulted in the *Crime Prevention Capability Maturity Model (CPCMM)*—a means of analysing and classifying approaches to crime prevention in relation to the capabilities required for their implementation. The CPCMM model enables the degree to which crime prevention is 'professionalised' and embedded within formal urban planning and design processes to be mapped. The model supports those responsible for the urban environment in their efforts to improve security and quality of life for citizens.

1.0 The widening remit of design

Design Against Crime began as a UK initiative to improve security by embedding crime prevention within design education and practice, with the aim to make everyday products and places less vulnerable to crime. Initiated in 1999 by the UK Home Office, Design Council and Department of Trade & Industry, *Design Against Crime* demonstrates to users and to wider society the value of adopting a design-led approach to security. Good design is focused on the human user, and designers have the ability to creatively reframe problems, gain insight from user research and develop innovative solutions. Through the application of these skills to crime issues, designers can potentially improve security—without increasing fear of crime, inconveniencing the user or creating unattractive products and environments. Design solutions are made less vulnerable to crime by integrating crime prevention concepts within meaningful and effective design thinking and practice—rather than by retrofitting security devices after a problem emerges. Over the last decade, the role of design in addressing social and societal challenges has expanded (Burns *et al,* 2006). *Design Against Crime* has been positioned as part of a movement to help policy makers, practitioners and industry address complex social issues related to crime and security. Tackling crime and anti-social behaviour, reducing feelings of insecurity and improving urban wellbeing are all priorities for policy makers and citizens.

In partnership with Greater Manchester Police (GMP), the *Design Against Crime Solution Centre* was established at the University of Salford in 2003. The scope of Solution Centre projects has expanded to include: (i) supporting designers in their efforts to consider crime prevention within the design process; (ii) working with stakeholders to support the delivery of crime prevention services; and (iii) embedding crime prevention within urban planning and design.

Design and research undertaken by the Solution Centre has supported the improvement of crime prevention services delivered by GMP's Architectural Liaison Unit to planners and architects working in Greater Manchester. This paper presents the *Crime Prevention Maturity Model,* based on research conducted in several European countries as part of the *Planning Urban Security* (PLuS) project. The model has been designed to support stakeholders across Europe in embedding crime prevention within urban design and planning. It is currently being used by the State CID of Lower Saxony (*Landeskriminalamt Niedersachsen*) to improve delivery mechanisms in Germany.

2.0 Theoretical approach

Within the urban environment, crime, anti-social behaviour and insecurity are generally addressed using an approach termed *Crime Prevention Through Environmental Desig*n (CPTED). Formulated in the United States in the 1970s, CPTED aims to design out crime from the urban environment, and has been implemented to varying degrees across the world. In the UK, Home Office research focused on the decision-making approach of criminals, resulting in *Situational Crime Prevention* (SCP) theory being adopted in the 1980s. Both CPTED and SCP are based on scientific evidence that reducing criminal opportunities reduces crime, with 'opportunity' being recognised as a fundamental causal factor in the occurrence of crime (Felson & Clarke, 1998; Farrell, 2013).

The body of scientific evidence supporting the value of design in crime prevention has grown significantly over the last two decades. Improved security is credited with reversing the dramatic and sustained rise in crime that occurred from the 1960s to the 1990s, affecting countries across the world to a greater or less degree. Better design and security of residential dwellings has resulted in common crimes such as burglary being significantly reduced (Farrell, 2013; van Dijk *et al,* 2007; van Dijk, 2012/13).

3.0 Standard principles, policies and guidance

Applied research has established design principles for urban security relating to aspects such as 'natural surveillance', access control, sense of ownership and management and maintenance. These principles are commonly illustrated with examples of good practice from specific development projects and shared to enable their replication in other locations. However, such case study examples rarely describe the context dependent structures, processes and capabilities that are often critical to their successful implementation. There has tended to be reliance on copying endpoint solutions that work elsewhere, rather than on understanding the mechanisms and structures that have enabled them to be developed and implemented.

A review of practice in Europe shows that crime prevention is being implemented through a range of delivery mechanisms, including: accreditation schemes (UK, Netherlands; Germany); crime prevention services that check development designs

when they are submitted for planning approval (UK; Netherlands; France; Austria); and a police consultancy service tailored to the needs of architects, developers and planners (Greater Manchester, UK).

Guidance is available on approaches to addressing crime issues within urban design and planning processes (e.g. UK's *Safer Places* document published by the ODPM in 2004), but its dependence upon specific national planning and development procedures make it difficult to apply across different country contexts. This seriously limits the practical transferability of crime prevention measures described by such context-dependent guidance.

In Europe, resources have been invested in the development of a European Standard in Urban Design and Planning (Technical Report CEN TR 14383-2). This EU Standard does not prescribe solutions, but outlines process-based principles for the design, planning and management of urban environments. Drawing on a traditional project management approach, it provides guidance on establishing a project team, identifying problems and developing and implementing solutions. However, the voluntary standard is not accepted across the whole of Europe, and has failed to be translated into a compulsory 'norm'. In 2007, it was formally accepted as a 'technical paper' intended to guide good practice (CEN, 2007).

4.0 Planning Urban Security in Europe

The issue of transferability to different settings was explored by the EU-funded *Planning Urban Security* (PLuS) research project, led by the State CID in Lower Saxony (*Landeskriminalamt Niedersachsen*) in Germany. PLuS set out to develop transferable measures for crime prevention by reviewing design and planning interventions addressing crime and related social issues in four European cities—Hanover (DE), Manchester (UK), Szczecin (PL) and Vienna (AT). In addition, empirical research was conducted to understand the specific context in each urban location. The findings revealed a number of issues affecting the transferability of best practice:

- Problems of crime, anti-social behaviour and insecurity varied considerably in type and intensity across the different contexts.
- The extent to which crime prevention was embedded within policing, design, planning and urban management also varied significantly.
- The PLuS research study areas displayed very different characteristics, some of which had implications for the potential effectiveness of CPTED principles. These included age of residents, housing tenure, level of place attachment and level of interaction between neighbours. Furthermore, it could not be assumed that the project areas were representative of each particular country (or even region) being studied.

The research team identified that while the project approach adopted by the European Standard (CEN, 2007) may support a team of stakeholders in tackling a pre-existing crime problem, it appeared less suited to the process of embedding crime prevention within broader urban design and planning activities. Interestingly, the idea of a 'standard' or 'norm' did not appear to fit comfortably with police forces and city authorities committed to responding to local needs and conditions.

The *Design Against Crime Solution Centre* worked with the State CID in Lower Saxony and its project partners to develop an alternative approach. This resulted in the *Crime Prevention Capability Maturity Model (CPCMM)*—a means of analysing and classifying approaches to crime prevention in relation to the capabilities required for their implementation. The model is based on knowledge from the design-led crime prevention (Davey & Wootton, 2008), design management and business process improvement literature—in particular, the Capability Maturity Model developed by Carnegie Mellon University (www.cmu.edu).

5.0 Crime Prevention Capability Maturity Model

The Crime Prevention Capability Maturity Model maps the degree to which crime prevention is embedded within professional design practice. Effective crime prevention is one aspect of the practice and management of design.

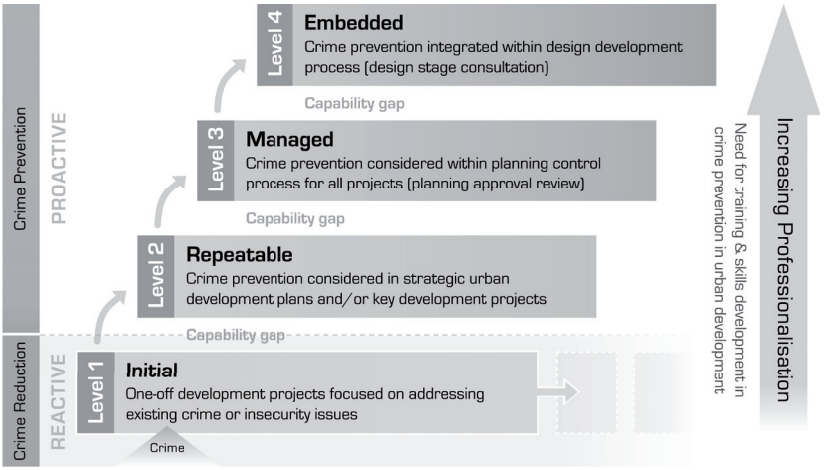

Figure 1. The Crime Prevention Capability Maturity Model

The Capability Maturity Model (CMM) concept was developed by Carnegie Mellon University as a way of mapping the execution of an organisation's management processes. The CMM approach suggests that business improvement results from in-

cremental changes to such processes and ultimately to their optimisation. Such improvement is the result of discrete, evolutionary steps, rather than revolutionary innovations. The CMM provides a framework for categorising organisational processes according to different levels of 'maturity' and supports efforts to ensure continuous process improvement.

Within the original CMM, there are five levels of maturity for assessing an organisation's processes and evaluating its capability—from 'initial' to 'optimising' (Paulk *et al*, 1999). Each level comprises a set of process goals that, when satisfied, both stabilise part of the process, and increase the capability of the organisation.

As part of the PLuS project, the Solution Centre adapted the CMM concept to support the development of systems and processes that integrate crime prevention into routine urban planning and design processes. Processes relating to urban management are not currently included within the Crime Prevention Capability Maturity Model.

The Model begins by considering the response to *existing problems* related to crime, anti-social behaviour or insecurity amongst key stakeholders. A crime-related problem may act as a trigger for action, usually in the form of a one-off project. Stakeholders responsible for tackling such problems within the urban environment typically include police, local authorities, city managers, planners and architects, who will usually work in partnership to address the problem. It should be noted that the authors are applying the Capability Maturity Model to a group of organisations, rather than to a single enterprise as envisaged by Carnegie Mellon University.

The Crime Prevention Capability Maturity Model (CPCMM) enables the degree to which crime prevention is embedded within professional urban design practice to be mapped, detailing levels 1, 2, 3 and 4 as follows:

(1) ***Initial*** – One-off development projects focused on addressing existing crime or insecurity issues

(2) ***Repeatable*** – Crime prevention considered in strategic urban development plans and/or key development projects

(3) ***Managed*** – Crime prevention considered within planning control process for all projects (planning approval review)

(4) ***Embedded*** – Crime prevention integrated within design development process (design stage consultation).

CPCMM Level 1 focuses on a response to an existing problem. It can therefore be seen as reactive, and thus is termed ***crime reduction***. Levels 2, 3 and 4 concentrate on measures to prevent problems from arising in the first place. Its activities are proactive, and can be termed ***crime prevention.*** This distinction between reactive and proactive strategies is important to make within urban security, but one that is rarely

explicit. The CPCMM maps the increasing integration of crime prevention within the urban planning process, highlighting opportunities for crime prevention to impact on **planning decisions** via the planning approval process. Beyond urban planning, the upper level of the model contextualises effective crime prevention as one aspect of the professional practice and management of design.

As can be seen, movement through the CPCMM relates to a concurrent process of 'increasing **professionalisation**' running through all four levels. This relates not only to education and qualifications, but to Continuous Professional Development strategies and methods for ensuring high standards of performance. When stakeholders attempt to move to a higher level, resources will need to be invested in improving the professional competence of existing staff, recruiting new staff and purchasing additional facilities or equipment. The goal is not simply to strive to reach level 4, but to seek to attain and achieve a level of crime prevention capability that is commensurate with the operating context of the organisation— including the problems being experienced and the resources available. Increased capability brings benefits in terms of ability to prevent crime, but incurs a cost. Costs and benefits must therefore be considered and balanced when seeking improvement in capability.

6.0 Crime prevention capabilities and contexts

The Crime Prevention Capability Maturity Model outlines the characteristics of each level of capability. These have been divided into "Essential features" and "Optional features":

1. Initial – One-off development projects focused on addressing existing crime or insecurity issues. At Level 1 capability, a security issue is addressed within certain projects, and is ad hoc. Skills and knowledge are brought together on the project, but may be disbanded afterwards. Nevertheless, the opportunity exists to learn from and repeat the project in other similar contexts. Indeed in some cases a successful 'one-off' project may form the first step in a longer term, more widely applicable strategic process.

Essential features	Optional features
• Awareness of crime/security problem at senior decision-maker level (e.g. via local/regional crime data, resident surveys or previous crime prevention projects) • Team with necessary authority and commitment, and some knowledge of crime prevention • Access to appropriate guidance and good practice exemplars.	• Crime prevention promoted through high profile project with good media coverage • Crime prevention considered within selection criteria for those involved in development project (e.g. architect with previous experience).

Table 1: Initial level – Essential and optional features

Examples of Level 1 activity include a project in Szczecin (Poland) to renovate courtyard areas of a residential block that attracted crime and antisocial behaviour, leading to insecurity amongst residents. Voivodeship Police Headquarters worked with local partner organisations to renovate the courtyards and establish a maintenance programme supported by residents.

2. Repeatable – Crime prevention considered in strategic urban development plans and/or key development projects. At Level 2 capability, consideration of crime prevention is more formalised. Consequently, senior management and/or political commitment is necessary and agreed protocols for delivery processes are needed. This is an opportunity for formal crime prevention partnerships to develop, and/or an accreditation scheme for buildings that meet specific standards.

Essential features	Optional features
• Stated local political interest in preventing crime through urban development • Senior commitment from organisations involved in delivering crime prevention (e.g. police, planning authorities, other stakeholders). This may result from demonstrator project(s) to illustrate value of crime prevention • Agreed protocol(s) for routinely considering crime prevention within strategic urban development projects • Availability of designated individuals to advise and deliver on crime prevention objectives • Access to guidance and good practice materials agreed by delivery partners.	• Award or accreditation scheme for good crime prevention design projects.

Table 2: Repeatable level – Essential and optional features

Following a series of pilot projects, the federal state of Lower Saxony in Germany moved to Level 2 capability when it established the "Security Partnership in Urban Development in Lower Saxony" (*Sicherheitspartnerschaft im Städtebau in Niedersachsen,* SIPA). As part of this, a quality audit scheme for secure living (QSN) has been established (http://www.sipa-niedersachsen.de). The partnership includes police, local planning authorities, housing associations and business, and results in crime issues being raised when considering quality of life within urban planning.

3. Managed – Crime prevention considered within planning control process for all projects (planning approval review). At Level 3 capability, consideration of crime prevention is embedded within the planning control processes. To achieve this, local

planning legislation may be required. Consequently, legal processes and criteria for assessment and enforcement are needed.

Essential features	Optional features
• A formal planning control process that is transparent and free from corruption • A municipal authority and planning department committed to taking a proactive approach to design-led crime prevention • Agreed protocol(s) for addressing crime prevention within the planning control process. For example, applicants might be made aware of need to meet crime prevention criteria and designs might be reviewed by crime prevention experts prior to approval for construction • Validated (effective) criteria against which to assess development projects (communicated via website, brochures and guidance material) • Sufficient design-led crime prevention experts to meet delivery deadlines of planning approval process.	• Supporting policies and planning legislation at national, regional or local government level.

Table 3: Managed level – Essential and optional features

Level 3 can be illustrated by Vienna City Council in Austria, where despite low levels of actual crime, safety and security are considered within the planning control process. Initiated by the City Council's "Women's Office" (*Frauenbüro*), women's safety and security is covered within its "gender mainstreaming" strategy, and applied to criteria for the assessment of planning applications. Plans for residential developments are reviewed by an Advisory Committee and, if judged to comply with the strategy, are eligible for a government subsidy. Consequently, safety is considered within most plans for residential developments in Vienna.

4. Embedded – Crime prevention integrated within design development process (design stage consultation). At Level 4 capability, consideration of safety and security is integrated within the professional practice of design—as one aspect of professional 'good practice'. At this level, crime prevention advice takes on a consultation role within the development process, with early-stage engagement to best suit the design and development process.

Essential features	Optional features
• Crime and security issues considered from early concept stage of design development process – Benefits of early consideration (including cost and design quality) is understood by stakeholders. The Need to consider crime/security issues is raised at initial meeting with planning authorities • Crime prevention experts capable of design consultation role, rather than just assessment role – Knowledge of development industry (e.g. architecture or planning background) and ability to communicate effectively with designers • Agreed protocol(s) for routinely considering crime prevention within all urban design projects • Access to and support for design-led crime prevention experts – Access to relevant crime statistics. Acquire and maintain necessary knowledge and skills.	• Fee paying crime prevention design consultation service within public sector. May be used to fund additional staff / resources required for increased crime prevention consultation provision • Dedicated crime incidence mapping and analysis function to support design decision-making – e.g. crime geographic mapping using Geographic Information Systems (GIS) technology.

Table 4: Embedded level – Essential and optional features

An example of practice that is moving towards the Level 4 capability is that of the Greater Manchester Police *Design for Security* consultancy service in Greater Manchester, UK. Consultants review all major building development projects submitted for planning approval. As local authorities have made it a condition for applicants to submit a *Crime Impact Statement (CIS)* with their application for planning approval, architects and developers are retaining *Design for Security* consultants at an early stage of the design process, incorporating their advice into the final design. The CIS contains contextual information about crime risk, as well as a review of the vulnerability of the proposed design. Early stage consultation benefits architects and developers by allowing advice to be easily incorporated into the design. GMP is able to charge a consultancy fee for this professional service, thereby covering the cost to the police of its delivery.

7.0 Conclusion

The Crime Prevention Capability Maturity Model was developed as a framework to help stakeholders understand and map their delivery of crime prevention. Importantly, the model covers three issues: (i) the shift in thinking and practice required to move

from reactive crime reduction to proactive crime prevention; (ii) differences in scale and quality associated with alternative approaches; and (iii) the differing contextual factors and conditions underpinning any capability for successful crime prevention delivery.

A framework, not a prescription

The *Solution Centre* does not dictate any single approach or method for delivering crime prevention. In addition, as local conditions vary so much the model is not meant to suggest an automatic escalation to Level 4. The State CID in Lower Saxony has just begun a research project to help improve crime prevention and quality of life through urban design and planning (www.transit-online.info). However, German stakeholders remain sceptical about the benefits of integrating crime prevention within their planning approval process. The German process already considers quality of life for residents/users, and there are concerns that embedding crime prevention would incur additional costs and increased bureaucracy. The CPCMM provides a starting point for exploring the extent to which crime prevention is already integrated into planning, and the costs and benefits of further investment in the approach.

Learning from best practice

Methods for delivering crime prevention often arise from specific local conditions and contexts, and transference to other locations may not be possible or even desirable. For example, the Greater Manchester Police *Design for Security* service is held up as an example of best practice in the UK. However, it was developed in response to specific contextual problems and opportunities, so adoption by other countries may be limited by differing contextual factors. These might range from rules preventing the police from acting as paid consultants, through restrictions on the use of conditional planning policies, to a lack of practical skills in design-led crime prevention.

Valuing design-led crime prevention

While methods for delivering crime prevention vary across Europe, the authors nonetheless believe that there are benefits to embedding it within the early stages of the design process. When this is achieved, designers are able to understand all needs and requirements, use their creative skills to generate solutions and better integrate solutions into the design. This early stage integration is much preferable to ‘retro-fitting’ unsympathetic security devices after the design is complete.

Evolving practice

The process of developing a European Standard for urban design and planning has enabled experts in crime prevention from across Europe to share knowledge and develop a common terminology and approach. To better engage different stakeholder groups, the handbook *Planning Urban Design and Management for Crime Prevention* (2007) was published in English, French, Italian and Spanish. Effort continues to be

invested in supporting development and implementation through European initiatives such as EU COST Action TU1203 *Crime Prevention through Urban Design & Planning*. The work of COST Action TU1203 is highlighting the benefit of conceptual models of crime prevention practice that can be applied across contexts, without the need for standardisation. This also underlines the value of design in helping stakeholders conceptualise their practice in ways that can be meaningfully shared across contexts.

Acknowledgements

The authors would like to thank: Dr Anke Schröder, Dirk Behrmann (LKA NI); Dr Melissa Marselle, Mike Hodge (Design Against Crime Solution Centre); Dr Günter Stummvoll, Dr Helmut Floegl, Alexander Neumann (Donau-Universität Krems); Dorota Silewicz, Andrzej Szraijber (Voivodeship Police Headquarters Szczecin).

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